



Designation: D 907 – 03

## Standard Terminology of Adhesives<sup>1</sup>

This standard is issued under the fixed designation D 907; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This standard is a compilation of definitions used in the science and technology of the adhesives industry. Terms that are generally understood or adequately defined in other readily available sources are not included.

1.2 Any changes in this standard since 1988 are documented as follows:

1.2.1 Appendix X1 gives a history of revisions made since 1988. Table X1.1 lists the terms that are affected as: (1) Terms Added, (2) Terms Revised, and (3) Terms Deleted.

1.2.1.1 In Table X1.1, the year of publication in Volume 15.06 is shown in parentheses following the term.

1.2.2 In the text of the standard, the year of publication is shown following each definition. Also, the following codes are included after the year of publication to describe the type change that was made: (A) Addition, (R) Revision, or (E) Edited.

1.2.3 Deletions are shown in Appendix X1, suitably footnoted. The deleted terms do not appear in the text of the standard.

1.2.4 Any special circumstances not covered by 1.2.2 and 1.2.3 are documented in Table X1.1, suitably footnoted.

### 2. Terminology

**acceptance test**, *n*—a test, or series of tests conducted by the procuring agency, or an agent thereof, upon receipt to determine whether an individual lot of materials conforms to the purchase order or contract or to determine the degree of uniformity of the material supplied by the vendor, or both. (Compare **preproduction test** and **qualification test**.)

**acid number**, *n*—the quantity of base, expressed in milligrams of potassium hydroxide, that is required to titrate acidic constituents present in 1 g of sample. (1992) (A) **D 2849, D-20**

**adhere**, *v*—to cause two surfaces to be held together by adhesion.

**adherend**, *n*—a body held to another body by an adhesive. (See also **substrate**.)

**adherend preparation**, *n*—See **surface preparation**.

**adhesion**, *n*—the state in which two surfaces are held together by interphase forces which may consist of chemical forces or interlocking action, or both. (R)

**mechanical adhesion**, *n*—adhesion between surfaces in which the adhesive holds the parts together by interlocking action.

**specific adhesion**, *n*—adhesion between surfaces which are held together by intermolecular forces of a chemical or physical nature. (2000) (R)

**adhesion promoter**, *n*—a substance used to improve bonding of the adhesive to the substrate. (Compare coupling agent and primer.)

DISCUSSION—The adhesion promoter may be added to an adhesive formulation or applied to the substrate.

**adhesive**, *n*—a substance capable of holding materials together by surface attachment. (See also **glue**, **gum**, **mucilage**, **paste**, **resin**, and **sizing**.)

DISCUSSION—Adhesive is the general term and includes among others cement, glue, mucilage, and paste. These terms are loosely used interchangeably. Various descriptive adjectives are applied to the term adhesive to indicate certain characteristics as follows:

- (1) Physical form, that is, liquid adhesive, tape adhesive
- (2) Chemical type, that is, silicate adhesive, resin adhesive
- (3) Materials bonded, that is, paper adhesive, metal-plastic adhesive
- (4) Conditions of use, that is, hot-setting adhesive

**adhesive, assembly**, *n*— See **assembly adhesive**.

**adhesive, bulk**, *n*— See **bulk adhesive**.

**adhesive, casein**, *n*— See **casein adhesive**.

**adhesive, cellular**, *n*— See **cellular adhesive**.

**adhesive, cold-setting**, *n*— See **cold-setting adhesive**.

**adhesive, contact**, *n*— See **contact adhesive**.

**adhesive, foamed**, *n*— See **foamed adhesive**.

**adhesive, gap-filling**, *n*— See **gap-filling adhesive**.

**adhesive, heat activated**, *n*— See **heat activated adhesive**.

**adhesive, hot-melt**, *n*— See **hot-melt adhesive**.

**adhesive, hot-setting**, *n*— See **hot-setting adhesive**.

**adhesive, intermediate-temperature-setting**, *n*— See **intermediate-temperature-setting adhesive**.

**adhesive, mastic**, *n*— See **mastic adhesive**.

**adhesive, multiple-layer**, *n*— See **multiple-layer adhesive**.

<sup>1</sup> This terminology is under the jurisdiction of ASTM Committee D14 on Adhesives and is the direct responsibility of Subcommittee D14.04 on Terminology.

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*adhesive, polyvinyl acetate emulsion, n*—See **polyvinyl acetate emulsion adhesive**.

*adhesive, pressure-sensitive, n*—See **pressure-sensitive adhesive**.

*adhesive, room-temperature-setting, n*—See **room-temperature-setting adhesive**.

*adhesive, separate application, n*—See **separate-application adhesive**.

*adhesive, solvent, n*—See **solvent adhesive**.

*adhesive, solvent-activated, n*—See **solvent-activated adhesive**.

*adhesive, structural, n*—See **structural adhesive**.

*adhesive, warm-setting, n*—See **warm-setting adhesive**.

*adhesive, urea-formaldehyde, n*—See **urea-formaldehyde adhesive**.

**adhesive, anaerobic, n**—See **anaerobic adhesive**.

**adhesive assembly, n**—a group of materials or parts, including adhesive, placed together for bonding or which has been bonded together. (See **assembly adhesive**.)

**adhesive dispersion, n**—a two-phase system in which one phase is suspended in a liquid. (Compare to **emulsion**.)

**adhesive joint, n**—See *adhesive joint* under **joint**.

**adhesive-joint failure, n**—the locus of fracture occurring in an adhesively-bonded joint resulting in a loss of load-carrying capability. (1995) (A)

*adhesion failure, n*—in *characterizing the locus of an adhesive-joint-failure*, the fracture occurring within the interphase region. (Compare *cohesion failure*.) (1999) (R)

*cohesion failure, n*—rupture of an adhesive bond, such that the separation appears to be within the adhesive. (Compare *adhesive failure*.)

*substrate failure, n*—in *characterizing the locus of an adhesive-joint failure*, the fracture occurring within the substrate. (See *cohesion failure*.)

*aggressive tack, n*—See *aggressive tack* under **tack**.

**aging time, n**—See **joint conditioning time**.

**amylaceous, adj**—pertaining to, or of the nature of, starch; starchy.

**anaerobic adhesive, n**—an adhesive that is kept in the uncured state by oxygen, as in air, and that cures in the absence of oxygen when exposed to metal ions, especially copper or iron. (1990) (A)

**apparent viscosity, n**—resistance to shear at a given rate of shear, expressed as viscosity in absolute units. (See **viscosity**.) (1991) (A)

*assembly, n*—See **adhesive assembly**.

**assembly adhesive, n**—an adhesive that can be used for bonding parts together, such as in the manufacture of a boat, airplane, furniture, and the like.

DISCUSSION—The term assembly adhesive is commonly used in the wood industry to distinguish such adhesives (formerly called “joint glues”) from those used in making plywood (sometimes called “veneer glues”). It is applied to adhesives used in fabricating finished structures or goods, or subassemblies thereof, as differentiated from adhesives

used in the production of sheet materials for sale as such, for example, plywood or laminates.

**assembly time, n**—the time interval between applying the adhesive on the substrate and the application of pressure, or heat, or both, to the assembly. (1990) (R)

DISCUSSION—For assemblies involving multiple layers or parts, the assembly begins with applying the adhesive on the first substrate.

*closed assembly time, n*—the time interval between the closing together of substrates after the adhesive has been applied, and the application of pressure, heat, or both, to the assembly. (1990) (R)

*open assembly time, n*—the time interval between applying adhesive on the substrates and closing them together before bonding. (1990) (R)

**A-stage, n**—in *polymer chemistry*, an early stage in a thermosetting resin reaction in which the material melts when heated and dissolves in certain liquids. (Compare **B-stage** and **C-stage**.) (1991) (R)

**autohesion, n**—adhesion developed by interdiffusion of the molecules of two surfaces of the same material and consequent obliteration of the interface between them. (Sometimes called “autoadhesion.”) (Compare **blocking**.) (1990) (A)

**bag molding, n**—a method of molding or bonding involving the application of fluid pressure, usually by means of air, steam, water, or vacuum, to a flexible cover which, sometimes in conjunction with the rigid die, completely encloses the material to be bonded.

**batch, n**—the manufactured unit or a blend of two or more units of the same formulation and processing. (Compare **manufactured unit**.)

**binder, n**—a component of an adhesive composition that is primarily responsible for the adhesive forces which hold two bodies together. (See also **extender** and **filler**.)

**blister, n**—an elevation of the surface of an adherend, somewhat resembling in shape a blister on the human skin; its boundaries may be indefinitely outlined and it may have burst and become flattened.

DISCUSSION—A blister may be caused by insufficient adhesive, inadequate curing time, temperature or pressure, or trapped air, water, or solvent vapor.

**blocked curing-agent, n**—a curing agent or hardener rendered unreactive, which can be reactivated as desired by physical or chemical means. (Compare **hardener**.)

**blocking, n**—an undesired adhesion between touching layers of a material, such as occurs under moderate pressure during storage or use.

**bond, n**—the union of materials by adhesives.

*edge joint, n*—in *wood bonding*, a type of laminate joint made by bonding adherends edge-to-edge with grain directions parallel to form wider stock.

*face joint, n*—in wood bonding, a type of laminate joint made by bonding adherends face-to-face with grain directions parallel to form thicker stock.

*laminate joint, n*—in wood bonding, a joint made by bonding layers of adherends face-to-face or edge-to-edge to form thicker or wider stock.

**bond, v**—to unite materials by means of an adhesive. (Synonym for **glue, v.**) (See also **adhere.**) (Compare **laminate, v.**)

**bondline, n**—the layer of adhesive which attaches two adherends. (Synonym for *glue line.*)

**bond strength, n**—the unit load applied to tension, compression, flexure, peel, impact, cleavage, or shear, required to break an adhesive assembly with failure occurring in or near the plane of the bond. (See also **adhesion** and **bond.**)

DISCUSSION—The term adherence is frequently used in place of bond strength.

*dry strength, n*—the strength of an adhesive joint determined immediately after drying under specified conditions or after a period of conditioning in a standard laboratory atmosphere.

*wet strength, n*—the strength of an adhesive joint determined immediately after removal from a liquid in which it has been immersed under specified conditions of time, temperature, and pressure.

DISCUSSION—The term is commonly used alone to designate strength after immersion in water. In latex adhesives the term is also used to describe the joint strength when the adherends are brought together with the adhesive still in the wet state.

**B-stage, n**—in polymer chemistry, an intermediate stage in a thermosetting resin reaction in which the material softens when heated, and swells but does not dissolve in certain liquids. (Compare **A-stage** and **C-stage.**) (1991) (R)

DISCUSSION—Some of the solvents that will dissolve resins in the A-stage will not dissolve resins in the B-stage.

**built-up laminated wood, n**—See *built-up laminated wood* under **wood laminate.**

**bulk adherend, n**—as related to *interphase*, the adherend, unaltered by the adhesive. (Compare to **bulk adhesive.**) (1988) (A)

**bulk adhesive, n**—as related to *interphase*, the adhesive, unaltered by the adherend. (Compare to **bulk adherend.**) (1988) (A)

**casein adhesive, n**—an aqueous colloidal dispersion of casein that may be prepared with or without heat, may contain modifiers, inhibitors, and secondary binders to provide specific adhesive properties, and includes a subclass, usually identified as *casein glue*, that is based on a dry blend of casein, lime, and sodium salts, mixed with water and prepared without heat. (1989) (A)

**catalyst, n**—a substance that initiates or changes the rate of chemical reaction, but is not consumed or changed by the reaction. (See also **hardener.**) (Compare **inhibitor.**) (1990) (R)

**caul, n**—a sheet of material employed singly or in pairs in hot or cold pressing of assemblies being bonded.

DISCUSSION—A caul is used to protect either the faces of the assembly or the press platens, or both, against marring and staining to prevent sticking; to facilitate press loading; to impart a desired surface texture or finish; and to provide uniform pressure distribution.

DISCUSSION—A caul may be made of any suitable material such as aluminum, stainless steel, hardboard, fiberboard, or plastic; the length and width dimensions being generally the same as those of the plates of the press where it is used.

*cellular adhesive, n*—Synonym for **foamed adhesive.**

*cement, n*—See Discussion under **adhesive.**

*cement, v*—See **bond.**

**cleavage, n**—in an adhesively bonded joint, a separation in the joint caused by wedge or other crack-opening type action. (1994) (A)

**cleavage-peel strength, n**—the force per unit width of bondline required to produce progressive separation by wedge or other crack-opening type action of two adherends where one or both undergo significant bending. (1994) (A)

**cleavage strength, n**—the force per unit width of bondline required to produce progressive separation by wedge or other crack-opening type action of two adherends of sufficient thickness to produce no significant bending. (1994) (A)

**closed assembly time, n**—See *closed assembly time* under **assembly time** (1990) (R).

**cohesion, n**—the state in which the constituents of a mass of material are held together by chemical and physical forces. (1992) (R)

*cohesive blocking, n*— See **blocking.**

*cold flow, n*— See **creep.**

**cold pressing, n**—a bonding operation in which an assembly is subjected to pressure without the application of heat.

**cold-setting adhesive, n**—an adhesive that sets at temperatures below 20°C (68°F). (See also **hot-setting adhesive, intermediate-temperature-setting adhesive, and room-temperature adhesive.**)

*colophony, n*— See **rosin.**

**condensation, n**—a chemical reaction in which two or more molecules combine with the separation of water or some other simple substance. (See also **polymerization.**)

DISCUSSION—The process is called polycondensation if a polymer is formed.

*conditioning time, n*— See **joint conditioning time.** (See also **curing time** and **setting time.**)

**consistency, n**—that property of a liquid adhesive by virtue of which it tends to resist deformation. (See also **viscosity** and **viscosity coefficient.**)

DISCUSSION—Consistency is not a fundamental property but is comprised of viscosity, plasticity, and other phenomena.

**contact adhesive, n**—an adhesive having the property of autohesion. (Also called *contact bond adhesive* and *dry-bond adhesive.*) (1990) (A)

DISCUSSION—When a contact adhesive is applied to two substrates and allowed to dry or cool until it loses its tack to the touch, it will instantly adhere to itself when the two adhesive surfaces are joined, even when only enough pressure is applied to result in good contact between the adhesive surfaces. The bond, even under light pressure, is



strong enough to hold the adherends together without further clamping, pressing, or airing. However, the strength of the joints with some types of contact adhesives increases with greater pressure, due to increased contact area, and with time, due to diffusion and cross-linking agents that are sometimes present. (1990) (A)

*contact bond adhesive, n*—Synonym for **contact adhesive**.

*copolymer, n*— See **polymer**.

*copolymerization, n*— See **polymerization**.

**coupling agent, n**—a molecule, having different or like functional groups, that is capable of reacting with surface molecules of two different substances, thereby chemically bridging the substances.

**cracking, n**—fine cracks that may extend in a network on or under the surface of or through a layer of adhesive.

**creep, n**—*in an adhesive*, the time-dependent increase in strain resulting from a sustained stress. (1991) (A)

**creep strain, n**—the total strain, at any given time, produced by the applied stress during a creep test. (1992) (A)

**D 2990, D-20; D 4680, D-14**

*cross laminate, n*— See *cross laminate* under **laminate, n**.

**crosslink, v**—to form chemical bonds between molecules to produce a three-dimensional network. (1991) (A)

**C-stage, n**—*in polymer chemistry*, the final stage in a thermosetting resin reaction in which the material does not soften when heated, and is essentially insoluble in most liquids. (Compare **A-stage** and **B-stage**.) (1991) (R)

**cure, v**—to change the physical properties of an adhesive by chemical reaction, which may be condensation, polymerization, or vulcanization; usually accomplished by the action of heat and catalyst, alone or in combination, with or without pressure. (See also **dry** and **set**.)

**curing agent, n**—*relative to adhesives*, a substance or mixture of substances that is part of an adhesive and is used to promote curing by taking part in the reaction. (Compare **catalyst**.) (Compare **blocked curing agent**.) (Synonym **hardener**.) (1991) (A)

**curing temperature, n**—the temperature to which an adhesive or an assembly is subjected to cure the adhesive. (See also **drying temperature**, **setting temperature**.)

DISCUSSION—The temperature attained by the adhesive in the process of curing (adhesive curing temperature) may differ from the temperature of the atmosphere surrounding the assembly (assembly curing temperature.)

**curing time, n**—the period of time during which an assembly is subjected to heat or pressure, or both, to cure the adhesive. (See also **joint-conditioning time**, **setting time**.)

DISCUSSION—Further cure may take place after removal of the assembly from the conditions of heat or pressure, or both.

**delamination, n**—the separation of layers in a laminate because of failure of the adhesive, either in the adhesive itself or at the interface between the adhesive and the adherend.

**diluent, n**—an ingredient added to an adhesive, usually to reduce the concentration of bonding materials. (See also **extender**, **thinner**.)

*dispersion, n*— See **adhesive dispersion**.

**doctor-bar or blade, n**—A scraper mechanism that regulates the amount of adhesive on the spreader rolls or on the surface being coated.

**doctor-roll, n**—a roller mechanism that is revolving at a different surface speed, or in an opposite direction, resulting in a wiping action for regulating the adhesive supplied to the spreader roll.

**double spread, n**—See *double spread* under **spread**.

**dry, v**—to change the physical state of an adhesive on an adherend by the loss of solvent constituents by evaporation or absorption, or both. (See also **cure**, **set**.)

*dry bond adhesive, n*—Synonym for **contact adhesive**.

**drying temperature, n**—the temperature to which an adhesive on an adherend or in an assembly or the assembly itself is subjected to dry the adhesive. (See also **curing temperature**, **setting temperature**.)

DISCUSSION—The temperature attained by the adhesive in the process of drying (adhesive drying temperature) may differ from the temperature of the atmosphere surrounding the assembly (assembly drying temperature).

**drying time, n**—the period of time during which an adhesive on an adherend or an assembly is allowed to dry with or without the application of heat or pressure, or both. (See also **curing time**, **joint-conditioning time**, and **setting time**.)

*dry strength, n*— See **bond strength**.

*dry tack, n*—See *dry tack* under **tack**.

**durability, n**—*as related to adhesive joints*, the endurance of joint strength relative to the required service conditions. (1990) (A)

DISCUSSION—Service conditions may include water and other chemicals, temperature, stress, radiation, microorganisms, and other environmental factors.

*edge joint*—See **joint**.

**elastomer, n**—a macromolecular material that returns rapidly to approximately the initial dimensions and shape after substantial deformation by a weak stress and release of the stress. (1999) (R)

**emulsion, n**—a two-phase liquid system in which small droplets of one liquid (the internal phase) are immiscible in, and are dispersed uniformly throughout, a second continuous liquid phase (the external phase). (See also **adhesive dispersion**.) (1988) (A)

DISCUSSION—The *internal phase* is sometimes described as the *disperse phase*. **D 2507, F-7; D 4317, D-14**

**extender, n**—substance, generally having some adhesive action, added to an adhesive to reduce the amount of the primary binder required per unit area. (See also **binder**, **diluent**, **filler**, and **thinner**.)

*failure, n*—See **adhesive-joint failure**, **adhesion failure**, **cohesion failure** and **substrate failure**.

**fiber-reinforced plastic (FRP), n**—a plastic that contains fibers in various forms such as cloth, mat, strands, or chopped to enhance properties.

**fiber tear**, *n*—in an FRP adhesively bonded joint, failure occurring exclusively within the fiber reinforced plastic matrix, characterized by the appearance of reinforcing fibers on both ruptured surfaces. (Also called *fiber tear failure*.) (1994) (A)

*fiber-tear failure*, *n*—in an FRP adhesively bonded joint—see **fiber tear**. (1994) (A)

**filler**, *n*—a relatively nonadhesive substance added to an adhesive to improve its working properties, permanence, strength, or other qualities. (See also **binder** and **extender**.)

**filler sheet**, *n*—a sheet of deformable or resilient material that, when placed between the assembly to be bonded and the pressure applicator, or when distributed within a stack of assemblies, aids in providing uniform application of pressure over the area to be bonded.

**fillet**, *n*—that portion of an adhesive which fills the corner or angle formed where two adherends are joined.

**finger joint**, *n*—see *finger joint* under **joint**.

**flow**, *n*—movement of an adhesive during the bonding process, before the adhesive is set.

**foamed adhesive**, *n*—an adhesive, the apparent density of which has been decreased substantially by the presence of numerous gaseous cells dispersed throughout its mass. (Synonym **cellular adhesive**.)

**gap-filling adhesive**, *n*—an adhesive capable of forming and maintaining a bond between surfaces that are not close-fitting.

DISCUSSION—Close-fitting is relative to a given material and industry; for example, standards in construction differ from standards in electronics. Some adhesives will bond by bridging without completely filling the gap, others by filling the gap completely. (1990) (A); (1994) (R)

**gel**, *n*—a semisolid system consisting of a network of solid aggregates in which liquid is held.

**gelation**, *n*—formation of a gel.

**glue**, *n*—originally, a hard gelatin obtained from hides, tendons, cartilage, bones, etc., of animals, and also an adhesive prepared from this substance by heating with water. (See also **adhesive**, **gum**, **mucilage**, **paste**, **resin**, and **sizing**.)

DISCUSSION—Through general use the term is now synonymous with the term “adhesive.”

*glue*, *v*—See **bond**, *v*.

**glue-laminated wood**, *n*—See *glue-laminated wood* under **wood laminate**.

*glue line*, *n*—Synonym for **bondline**.

**GLULAM**, *n*—Synonym for **structural-glued-laminated timber**. (1993) (A)

**gum**, *n*—any of a class of colloidal substances, exuded by or prepared from plants, sticky when moist, composed of complex carbohydrates and organic acids, which are soluble or swell in water. (See also **adhesive**, **glue**, *n*, and **resin**.)

DISCUSSION—The term gum is sometimes used loosely to denote various materials that exhibit gummy characteristics under certain conditions, for example, gum balata, gum benzoin, and gum asphaltum. Gums are included by some in the category of natural resins.

**hardener**, *n*—synonym for **curing agent**. (1991) (R)

**heat-activated adhesive**, *n*—a dry adhesive film that is rendered tacky or fluid by application of heat or heat and pressure to the assembly. (Compare **hot-melt adhesive**.)

**hot-melt adhesive**, *n*—an adhesive which is rendered fluid by heat and forms a bond upon cooling.

DISCUSSION—A hot-melt adhesive may be applied in any of the following states—molten, powder, or dry film. (1991) (R)

**hot-setting adhesive**, *n*—an adhesive that requires a temperature at or above 100°C (212°F) to set it. (Compare **cold-setting adhesive**, **intermediate-setting adhesive**, and **room-temperature-setting adhesive**.)

**impact strength**, *n*—as related to adhesives, the kinetic energy per area absorbed by an adhesively-bonded joint when fractured by an impacting body. (1995) (A)

**inhibitor**, *n*—a substance that slows down chemical reaction. Inhibitors are sometimes used in certain types of adhesives to prolong storage or working life. (Also *retarder*.) (Compare **catalyst** and **hardener**.)

**initial tangent modulus**, *n*—the slope of the stress-strain curve at the origin. (1992) (A) **D 3983, D-14; E 6, E-28**

**intermediate-temperature-setting adhesive**, *n*—an adhesive that sets in the temperature range from 31 to 99°C (87 to 211°F). (Synonym *warm-setting adhesive*.) (Compare **cold-setting adhesive**, **hot-setting adhesive**, and **room-temperature-setting adhesive**.)

**interphase**, *n*—in an adhesive joint, a region of finite dimension extending from a point in the adherend where the local properties (chemical, physical, mechanical, and morphological) begin to change from the bulk properties of the adherend to a point in the adhesive where the local properties equal the bulk properties of the adhesive. (1990) (A); (1999) (R)

**joint**, *n*

*adhesive joint*, *n*—location at which two adherends are held together with a layer of adhesive. (See also **bond**, *n*.)

*edge joint*, *n*—in wood bonding, a joint made by bonding adherends edge to edge (with grain directions parallel) to form wider stock. (1992) (A)

*finger joint*, *n*—a joint formed by bonding two precut members shaped like fingers. (See Fig. 1.) (1990) (A)

*laminated joint*, *n*—in wood bonding, a joint made by bonding layers of adherends face to face to form thicker stock. (1992) (A)

*lap joint*, *n*—a joint made by placing one adherend partly over another and bonding together the overlapped portions.

*scarf joint*, *n*—a joint made by cutting away similar angular segments of two adherends and bonding the adherends with the cut areas fitted together.

*starved joint*, *n*—a joint that has an insufficient amount of

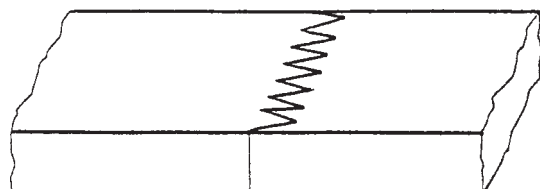


FIG. 1 Finger Joint

adhesive to produce a satisfactory bond.

**DISCUSSION**—This condition may result from too thin a spread to fill the gap between the adherends, excessive penetration of the adhesive into the adherend, too short an assembly time, or the use of excessive pressure.

*joint aging time, n*—synonym for **joint conditioning time**.

**joint-conditioning time**—the time interval between the removal of the joint from the conditions of heat or pressure, or both, used to accomplish bonding and the attainment of approximately maximum bond strength. (Synonym *joint-aging time*.) (See also **curing time, drying time, and setting time**.)

**laminate, n**—a product made by bonding together two or more layers of material or materials. (See also **wood laminates**.)

*cross laminate, n*—a laminate in which some of the layers of material are oriented at right angles to the remaining layers with respect to the grain or strongest direction in tension. (Compare **parallel laminate**.)

**DISCUSSION**—Balanced construction of the laminations above the center line of the thickness of the laminate is normally assumed.

*parallel laminate, n*—a laminate in which all the layers of material are oriented approximately parallel with respect to the grain or strongest direction in tension. (Compare **cross laminate**.)

**laminate, v**—to unite layers of material with adhesive. (Compare **bond, v**.)

*laminate joint*—See **joint**.

**laminated veneer lumber (LVL), n**—lumber made by laminating veneers in which the grain of all the veneers is essentially parallel to the lengthwise dimension.

*laminated wood product, n*—See under **wood laminates**.

**lamination, n**—1) the process of preparing a laminate. 2) any layer in a laminate. (Compare **laminate, n** and **wood laminate**.)

**lap joint, n**—See *lap joint* under **joint**.

**latex, n**—a stable dispersion of polymeric substance in an essentially aqueous medium. (1988) (A) **D 4317, D-14**

**layer, n**—*as related to veneer and plywood*, a single veneer ply or two or more plies laminated with grain direction parallel. (1990) (A)

**DISCUSSION**—A parallel laminated layer is two or more plies laminated with grain direction parallel.

**legging, n**—the drawing of filaments or strings when adhesive-bonded substrates are separated. (See also **stringiness** and **webbing**.) (Compare **teeth**.)

**manufactured unit, n**—a quantity of finished adhesive or finished adhesive component, processed at one time. (Compare **batch**.)

**DISCUSSION**—The manufactured unit may be a batch or a part thereof.

*mastic, n*—See **mastic adhesive**.

**mastic adhesive, n**—a gap-filling adhesive applied as a paste or putty-like material. (Also called *mastic*.) (1992) (A)

**matrix, n**—the part of an adhesive which surrounds or engulfs

embedded filler or reinforcing particles and filaments.

**maturing temperature, n**—the temperature, as a function of time and bonding condition, that produces desired characteristics in bonded components.

**DISCUSSION**—The term is specific for ceramic adhesives.

**mechanical adhesion, n**—See *mechanical adhesion* under **adhesion**.

**modifier, n**—any chemically inert ingredient added to an adhesive formulation to change its properties. (Compare **filler, plasticizer, extender**.)

**monomer, n**—a relatively simple compound which can react to form a polymer. (Compare **polymer**.)

**mucilage, n**—an adhesive prepared from a gum and water, and also in a more general sense, a liquid adhesive which has a low order of bonding strength. (See also **adhesive, glue, paste, and sizing**.)

**multiple-layer adhesive, n**—a dry-film adhesive, usually supported, with a different adhesive composition on each side; designed to bond dissimilar materials such as the core to face bond of a sandwich composite.

**Newtonian behavior, n**—the property of a liquid in which its viscosity is constant over a stated range of strain rates. (Compare **non-Newtonian behavior**.) (1994) (A)

**nominal stress, n**—the stress at a point calculated on the net cross section by simple elastic theory without taking into account the effect on the stress produced by discontinuities such as holes, grooves, fillets, or any combination of them. (1992) (A) Taken in part from **E 6, E-28; D 3983, D-14**

**non-Newtonian behavior, n**—the property of a liquid in which its viscosity is not constant over a stated range of strain rates. (1994) (A)

**nonvolatile content, n**—the portion of a material that remains after volatile matter has been evaporated under specified ambient or accelerated conditions. (See **solids content**.)

**DISCUSSION**—The measured percentage of nonvolatile matter in an adhesive will vary according to the analytical procedure. A standard test method must be used to obtain consistent results. (1994) (A)

**novolak, n**—a phenolic-aldehydic resin that, unless a source of methylene groups is added, remains permanently thermoplastic. (See also **thermoplastic, n**.) (Compare **resinoid**.)

**open assembly time, n**—See *open assembly time* under **assembly time** (1999) (R).

*parallel laminate, n*—See *parallel laminate* under **laminate, n**.

**paste, n**—an adhesive composition having a characteristic plastic-type consistency, that is, a high order of yield value, such as that prepared by heating a mixture of starch and water and subsequently cooling the hydrolyzed product. (Compare **adhesive, glue, mucilage, and sizing**.)

**peak load, n**—maximum force recorded during a strength test. (1994) (A)

**peel strength, n**—the average load per unit width of bondline required to separate progressively a flexible member from a rigid member or another flexible member. (1993) (A)

**DISCUSSION**—Flexible has different meanings in different peel tests,



such as “T,” 180-degree, floating-roller, or climbing drum. The angle between the members varies with the type of peel test.

**penetration, n**—the entering of an adhesive into an adherend.

DISCUSSION—This property of a system is measured by the depth of penetration of the adhesive into the adherend.

**permanence, n**—the resistance of an adhesive bond to deteriorating influences.

**pick-up roll, n**—a spreading device where the roll for picking up the adhesive runs in a reservoir of adhesive.

**pin-and-collar specimen, n**—an assembly of a metal pin bonded inside a metal collar, used to measure the shear strength of an adhesive (see Fig. 2). (1991) (A)

**plasticity, n**—a property of adhesives that allows the material to be deformed continuously and permanently without rupture upon the application of a force that exceeds the yield value of the material.

**plasticizer, n**—*in an adhesive*, a substance added to increase softness, flexibility, and extensibility. (1990) (A)

**plywood, n**—See *plywood* under **wood laminate**.

**polycondensation, n**— See **condensation**.

**polymer, n**—a material formed by the chemical reaction of molecules to form higher molecular weight molecules consisting of repeating units. (2000) (R)

**polymerization, n**—a chemical reaction in which the molecules of a monomer(s) are linked together in repeating units to form larger molecules. (1999) (R)

**polyvinyl acetate emulsion adhesive, n**—a latex adhesive in which the polymeric portion comprises polyvinyl acetate, copolymers based mainly on polyvinyl acetate, or a mixture of these, and which may contain modifiers and secondary binders to provide specific properties. (1989) (A) **D 4317, D-14**

**post-cure, n**—a treatment (normally involving heat) applied to an adhesive assembly following the initial cure, to modify specific properties.

**post-cure, v**—to expose an adhesive assembly to an additional cure, following the initial cure, for the purpose of modifying specific properties.

**pot life, n**— Synonym for **working life**.

**pre-bond treatment, n**—Synonym for **surface preparation**.

**preproduction test, n**—a test or series of tests conducted by (1) an adhesive manufacturer to determine conformity of an adhesive batch to established production standards, (2) a fabricator to determine the quality of an adhesive before parts are produced, or (3) an adhesive specification custodian to determine conformance of an adhesive to the requirements of a specification not requiring qualification tests. (Compare **acceptance test** and **qualification test**.)

**pressure-sensitive adhesive, n**—a viscoelastic material which in solvent-free form remains permanently tacky and will

adhere instantaneously to most solid surfaces with the application of very slight pressure.

**pressure-sensitive article, n**—a combination of a pressure-sensitive adhesive with a backing or with a backing and release liner.

DISCUSSION—Examples of such articles include tapes, labels, stickers and handspreads.

**transfer failure, n**—*in characterizing the locus of failure in a pressure-sensitive article*, separation at the interface of adhesive and backing.

**primer, n**—a coating applied to a surface, prior to the application of an adhesive, to improve the performance of the bond.

**proportional limit, n**—the maximum stress that a material is capable of sustaining without significant deviation from proportionality of stress to strain. (1994) (A)

**qualification test, n**—a series of tests conducted by the procuring activity, or an agent thereof, to determine conformance of materials, or materials system, to the requirements of a specification which normally results in a qualified products list under the specification. (Compare **acceptance test** and **preproduction test**.)

DISCUSSION—Generally, qualification under a specification requires a conformance to all tests in the specification, or it may be limited to conformance to a specific type or class, or both, under the specification.

**RTV, n**—room temperature vulcanization (1992) (A)

**rate of creep, n**—the slope of the creep-time curve at a given time. (1992) (A) **E 6, E-28; D 4680, D-14**

**release paper, n**—a sheet, serving as a protectant or carrier, or both, for an adhesive film or mass, which is easily removed from the film or mass prior to use.

**resin, n**—(1) a solid, semisolid, or pseudosolid organic material that has an indefinite and often high molecular weight, exhibits a tendency to flow when subjected to stress, usually has a softening or melting range, and usually fractures conchoidally. (2) liquid resin—an organic polymeric liquid which, when converted to its final state for use, becomes a resin. (See also **adhesive, glue, gum, and rosin**.)

**resinoid, n**—any of the class of thermosetting synthetic resins, either in their initial temporarily fusible state or in their final infusible state. (See also **novolak** and **thermosetting**.)

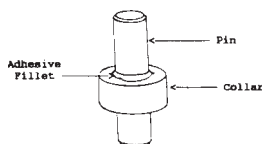
**retarder, n**— Synonym for **inhibitor**.

**retrogradation, n**—a change of starch pastes from low to high consistency on aging.

**room-temperature-setting adhesive, n**— an adhesive that sets in the temperature range from 20 to 30°C (68 to 86°F), in accordance with the limits for Standard Room Temperature specified in Practice D 618. (Compare **cold-setting adhesive, hot-setting adhesive, and intermediate-setting adhesive**.)

**rosin, n**—a resin obtained as a residue in the distillation of crude turpentine from the sap of the pine tree (gum resin) or from an extract of the stumps and other parts of the tree (wood rosin). (Compare **resin**.)

**scarf joint, n**—See *scarf joint* under **joint**.



**FIG. 2 Assembled Pin-and-Collar Test Specimen**

**secant modulus**, *n*—the slope of the secant drawn from the origin to any specified point on the stress-strain curve. (1992) (A) **D 3983**

*self-curing*, *adj*— See **self-vulcanizing**.

**self-vulcanizing**, *adj*—pertaining to an adhesive that undergoes vulcanization without the application of heat. (See also **vulcanization**, *n*.)

**separate-application adhesive**, *n*— a term used to describe an adhesive consisting of two parts, one part being applied to one adherend and the other part to the other adherend and the two brought together to form a joint.

**set**, *v*—to convert an adhesive into a fixed or hardened state by chemical or physical action, such as condensation, polymerization, oxidation, vulcanization, gelation, hydration, or evaporation of volatile constituents. (See also **cure** and **dry**.)

**setting temperature**, *n*—the temperature to which an adhesive or an assembly is subjected to set the adhesive. (See also **curing temperature** and **drying temperature**.)

DISCUSSION—The temperature attained by the adhesive in the process of setting (adhesive setting temperatures) may differ from the temperature of the atmosphere surrounding the assembly (assembly setting temperature).

**setting time**, *n*—the period of time during which an assembly is subjected to heat or pressure, or both, to set the adhesive. (See also **curing time**, **joint-conditioning time**, and **drying time**.)

**shear**, *n*—*in an adhesively-bonded joint*, stress, strain or failure resulting from applied forces that tends to cause adjacent planes of a body to slide parallel in opposite directions. (1995) (A)

**shear modulus**, *n*—the ratio of shear stress to corresponding shear strain below the proportional limit. (Compare **secant modulus**.) (See **proportional limit**.) (1993) (A)

DISCUSSION—The term shear modulus is generally reserved for materials that exhibit linear elastic behavior over most of their stress-strain diagram. Many adhesives exhibit curvilinear or nonelastic behavior, or both, in which case some other term, such as secant modulus, may be substituted.

**shear strain**, *n*—the tangent of the angular change, due to force between two lines originally perpendicular to each other through a point in the body. (1992) (A)

DISCUSSION—Shear strain equals adherend slip/adhesive layer thickness. **E 6, E-28; D 3983, D-14; D 4027, D-14**

**shear strength**, *n*—*in an adhesive joint*, the maximum average stress when a force is applied parallel to the joint. (See **bond strength**.) (1993) (A)

DISCUSSION—In most adhesive test methods, the shear strength is actually the maximum average stress at failure of the specimen, not necessarily the true maximum stress in the material.

*shelf life*, *n*—Synonym for **storage life**.

**shortness**, *n*—a qualitative term that describes an adhesive that does not string cotton, or otherwise form filaments or threads during application.

**single spread**, *n*—See *single spread* under **spread**.

*size*, *n*—Synonym for **sizing**.

**sizing**, *n*—the process of applying a material on a surface in order to fill pores and thus reduce the absorption of the subsequently applied adhesive or coating or to otherwise modify the surface properties of the substrate to improve the adhesion, and also, the material used for this purpose. (Synonym *size*.) (See also **primer**.)

**slippage**, *n*—the movement of adherends with respect to each other during the bonding process.

**solids content**, *n*—the percentage by weight of the nonvolatile matter in an adhesive. (See **nonvolatile content**.)

**solvent-activated adhesive**, *n*—a dry-film adhesive that is rendered tacky just prior to use by application of a solvent.

**solvent adhesive**, *n*—an adhesive having a volatile organic liquid as a vehicle.

DISCUSSION—This term excludes water-based adhesives.

**specific adhesion**, *n*—See *specific adhesion* under **adhesion** (2000) (R).

**spread**, *n*—the quantity of adhesive per unit joint area applied to an adherend, usually expressed in pounds of adhesive per thousand square feet of joint area.

*double spread*, *n*—application of adhesive to both adherends of a joint.

*single spread*, *n*—application of adhesive to only one adherend of a joint.

**squeeze-out**, *n*—adhesive pressed out of the joint during the bonding process. (1990) (R)

**starved joint**, *n*—See *starved joint* under **joint**.

**storage life**, *n*—the period of time during which a packaged adhesive can be stored under specified temperature conditions and remain suitable for use. (Synonym **shelf life**.) (Compare **working life**.)

**strain**, *n*—the unit change due to stress, in the size or shape of a body referred to its original size or shape. (1990) (A)

*strength*, *n*—See **bond strength**.

**stress**, *n*—force exerted per unit area at a point within a plane. (1991) (A)

DISCUSSION—Stress on a planar surface is identical at all points on the plane. Stress on a non-planar surface varies with the location of the point, depending upon the direction of the application of stress. (1992) (R)

**stress-strain diagram**, *n*—a diagram in which corresponding values of stress and strain are plotted against each other. (1992) (A)

DISCUSSION—Values of stress are usually plotted as ordinates (vertically) and values of strain as abscissas (horizontally). **E 6, E-28; D 3983, D-14; D 4027, D-14**

**stringiness**, *n*—the property of an adhesive that results in the formation of filaments or threads when adhesive transfer surfaces are separated. (See also **legging** and **webbing**.) (Compare **teeth**.)



DISCUSSION—Transfer surfaces may be rolls, picker plates, stencils, etc.

**structural adhesive**, *n*—a bonding agent used for transferring required loads between adherends exposed to service environments typical for the structure involved.

**structural-glued-laminated timber**, *n*—an engineered, stress-rated product of a timber laminating plant comprising assemblies of specially selected and prepared wood laminations securely bonded together with adhesives, with the following characteristics: (1) The grain of all laminations is approximately parallel longitudinally, and (2) The laminations may be comprised of pieces end-joined to form any length, of pieces placed or glued edge-to-edge to make wider ones, or of pieces bent to curved form during gluing. (Synonym **GLULAM**) ANSI/AITC A190.1—1992, American National Standard for Wood Products—Structural Glued Laminated Timber (Edited to conform with ASTM format.) (1993) (A)

**substrate**, *n*—*as related to adhesives*, a material upon which an adhesive is applied. (Compare **adherend**.) (1990) (R)

**surface preparation**, *n*—a mechanical or chemical method used to make a substrate more receptive to forming an adhesive bond. (Synonym *pre-bond treatment*.) (1989) (R)

**syneresis**, *n*—the exudation of small amounts of liquid by gels on standing.

**tack**, *n*—the property of an adhesive that enables it to form a bond of measurable strength immediately after adhesive and adherend are brought into contact under low pressure. (See also **tack range** and **tacky-dry**.)

*aggressive tack*, *n*—Synonym for **dry tack**.

*dry tack*, *n*—the property of certain adhesives, particularly nonvulcanizing rubber adhesives, to adhere on contact to themselves at a stage in the evaporation of volatile constituents, even though they seem dry to the touch. (Synonym *aggressive tack*.)

**tack range**, *n*—the period of time in which an adhesive will remain in the tacky-dry condition after application to an adherend, under specified conditions of temperature and humidity.

**tacky-dry**, *adj*—pertaining to the condition of an adhesive when the volatile constituents have evaporated or been absorbed sufficiently to leave it in a desired tacky state.

**teeth**, *n*—the resultant surface irregularities or projections formed by the breaking of filaments or strings which may form when adhesive-bonded substrates are separated. (Compare **legging**, **stringiness**, and **webbing**.)

**telegraphing**, *n*—in a laminate or other type of composite construction, a condition in which irregularities, imperfections, or patterns of an inner layer are visibly transmitted to the surface.

DISCUSSION—Telegraphing is occasionally referred to as photographing.

**tensile strength**, *n*—*in an adhesive joint*, the maximum tensile stress that a material is capable of sustaining calculated from the maximum load applied perpendicular to the joint divided

by the original cross-sectional area of the joint. (1994) (A)

**thermoplastic**, *adj*—capable of being repeatedly softened by heat and hardened by cooling.

**thermoplastic**, *n*—a material that will repeatedly soften when heated and harden when cooled. (See also **novolak**.)

**thermoset**, *n*—a crosslinked polymeric material. (1990) (R)

**thermosetting**, *adj*—having the property of undergoing a chemical reaction by the action of heat, catalysts, ultraviolet light, etc., leading to a relatively infusible state.

**thermosetting resin**, *n*—a polymeric material capable of crosslinking under the influence of heat, pressure, radiation, ultraviolet light, or chemical agents to form a thermoset. (See also **A-stage**, **B-stage**, and **C-stage**.) (1991) (A)

DISCUSSION—Many important properties of thermosetting resins, including their infusibility, insolubility, resistance to swelling, and most mechanical properties, increase with the degree of crosslinking.

**thinner**, *n*—a volatile liquid added to an adhesive to modify the consistency or other properties. (See also **diluent** and **extender**.)

**thixotropy**, *n*—*in a liquid*, the property of thinning when subjected to strains greater than the yield strain and of rethickening with time upon subsequent rest. (See **yield strain** and **viscosity**.) (1992) (R)

DISCUSSION—The liquid must exhibit yield to be thixotropic. If the liquid is deformed more than the yield strain, the underlying elastic network is disrupted and its viscosity is reduced. The network reestablishes itself in time when at rest.

**urea-formaldehyde adhesive**, *n*—(1) an aqueous colloidal dispersion of urea-formaldehyde polymer which may contain modifiers and secondary binders to provide specific adhesive properties, (2) a type of adhesive, based on a dry urea-formaldehyde polymer and water. (1989) (A)

DISCUSSION—A curing agent is commonly used with this type of adhesive.

**vacuum forming**, *n*—a process in which an adherend is brought in intimate contact with a substrate to form an assembly by the evacuation of the surrounding air. (2003) (A)

**viscosity**, *n*—*of a liquid*, the resistance to flow expressed as the ratio of the applied shear stress to the resulting rate of shearing strain. (See **Newtonian behavior**, **non-Newtonian behavior**, and **thixotropy**.) (Compare **consistency**.) (1992) (R)

DISCUSSION—The value for the viscosity of a liquid is the viscosity coefficient.

**viscosity coefficient**, *n*—the shearing stress tangentially applied that will induce a velocity gradient. A material has a viscosity of one poise when a shearing stress of one dyne per square centimetre produces a velocity gradient of (1 cm/s)/cm. (See also **viscosity**.)

**vulcanization**, *n*—an irreversible chemical change (for example, cross-linking) in which a rubber compound becomes

less plastic with greater elasticity, strength, stability, and chemical resistance over a greater range of temperatures. (1999) (R)

**vulcanize**, *v*—to subject to vulcanization.

*warm-setting adhesive*, *n*—Synonym for **intermediate-temperature-setting adhesive**.

**warp**, *n*—a significant variation from the original true, or plane surface.

**webbing**, *n*—filaments or threads that may form when adhesive transfer surfaces are separated. (See also **legging** and **stringiness**.) (Compare **teeth**.)

DISCUSSION—Transfer surfaces may be rolls, picker plates, stencils, etc.

**wedge**, *n*—*in the field of adhesive technology*, a tool made from a rigid material, tapering to a thin edge, used to separate adherends by force. (1994) (A)

**wet strength**, *n*—See *wet strength* under **bond strength**.

**wood failure**, *n*—the rupturing of wood fibers in strength tests on bonded specimens, usually expressed as the percentage of the total area involved which shows such failure.

*deep wood failure*, *n*—failure that is invariably several to many cells away from the adhesive layer, in which the fracture path is strongly influenced by the grain angle and the growth-ring structure. **D 5266, D-14**

*shallow wood failure*, *n*—failure that is invariably within the first one or two layers of cells beyond the adhesive layer in which the fracture path is not influenced by the wood-grain angle or growth-ring structure. **D 5266, D-14**

**wood laminates**, *n*—(See also **laminated**, *n*)

*built-up laminated wood*, *n*—an assembly made by joining layers of lumber with mechanical fastenings so that the grain of all laminations is essentially parallel.

*glue-laminated wood*, *n*—an assembly made by bonding layers of veneer or lumber with an adhesive so that the grain of all laminations is essentially parallel.

*plywood*, *n*—a panel generally flat built up of layers of

veneer called plies, united under pressure by an adhesive to create a panel with the bond between the plies as strong as, or stronger than, the wood, and that has the following characteristics: (1) is constructed of an odd number of layers with grain of adjacent layers perpendicular, (2) with a layer consisting of either a single ply or two or more plies laminated with parallel grain direction, and (3) with outer layers and all odd numbered layers generally having the grain direction oriented parallel to the long dimension of the panel.

DISCUSSION—The odd number of layers with alternating grain direction equalizes strains, reduces splitting, and minimizes dimensional change and warping of the panel.

**wood veneer**, *n*—a thin sheet of wood, generally within the thickness range from 0.01 to 0.25 in. (0.3 to 6.3 mm) to be used in a laminate.

**working life**, *n*—the period of time during which an adhesive, after mixing with catalyst, solvent, or other compounding ingredients, remains suitable for use. (Synonym **pot life**.) (Compare **storage life**.)

**yield strain**, *n*—the strain below which a material acts in an elastic manner, and above which it begins to exhibit permanent deformation or flow.

DISCUSSION—If a force or stress applied to a material strains that material less than its yield strain, all of the energy absorbed in the deformation is recovered when the force or stress is removed. All points within the material return to their original positions, thus showing elastic behavior. If the material is deformed more than the yield strain, some permanent deformation (flow) occurs and the points within the material do not return to their original positions when the stress is removed. Part of the energy is consumed in the permanent deformation. (1992) (A); (1994) (R)

**yield stress**, *n*—the stress (either normal or shear) at which a marked increase in deformation occurs without an increase in load. (Synonym *yield value*) (1992) (R)

*yield value*, *n*—Synonym **yield stress**. (1992) (R)

## APPENDIX

### (Nonmandatory Information)

#### X1. ADDITIONS AND CHANGES SINCE 1988 IN TERMINOLOGY D 907 IN THE ANNUAL BOOK OF ASTM STANDARDS, VOLUME 15.06

X1.1 In 1989 Volume 15.06, the format of Terminology D 907 was changed from logical groupings to alphabetical listing with a few logical groupings for related terms.

X1.2 In 1991 Volume 15.06, the year of publication was added in parentheses following the definition for any new or revised definition adopted since 1988.

X1.3 Beginning with 1993 Volume 15.06, the definitions added, revised, deleted or edited, as well as any changes made in terms listed and cross references, are given in alphabetical

order in table form, suitably footnoted when necessary. See Table X1.1. The year of publication is shown in parentheses following the definition.

X1.4 Beginning with 1993 Volume 15.06, all new and revised definitions in the text of the standard will carry one of the following codes:

- (A) Addition since previous Volume 15.06,
- (R) Revision since previous Volume 15.06, or
- (E) Edited since previous Volume 15.06.

**TABLE X1.1 Additions, Revisions, and Deletions to Terminology D 907 Since 1988**

Terms Added	Terms Revised	Terms Deleted
acid number, <i>n</i> (1992)	A-stage, <i>n</i> (1991)	resite, <i>n</i> (1990)
adhesive-joint failure, <i>n</i> (1995)	B-stage, <i>n</i> (1991)	resitol, <i>n</i> (1990)
anaerobic adhesive, <i>n</i> (1990)	C-stage, <i>n</i> (1991)	resol, <i>n</i> (1990)
apparent viscosity, <i>n</i> (1991)	adhesion, <i>n</i> (1999)	thermoset, <i>adj</i> (1990)
autohesion, <i>n</i> (1990)	adhesion failure, <i>n</i> (1995), (1999)	
bulk adherend, <i>n</i> (1988)	assembly time, <i>n</i> (1990)	
bulk adhesive, <i>n</i> (1988)	catalyst, <i>n</i> (1990)	
casein adhesive, <i>n</i> (1989)	closed assembly time, <i>n</i> (1990)	
cleavage, <i>n</i> (1994)	cohesion, <i>n</i> (1992)	
cleavage-peel strength, <i>n</i> (1994)	elastomer, <i>n</i> (1999)	
cleavage strength, <i>n</i> (1994)	gap-filling adhesive, <i>n</i> (1994) <sup>A</sup>	
contact adhesive, <i>n</i> (1990)	hardener, <i>n</i> (1991) <sup>B</sup>	
creep, <i>n</i> (1991)	hot-melt adhesive, <i>n</i> (1991)	
creep strain, <i>n</i> (1992)	interphase, <i>n</i> (1999)	
crosslink, <i>v</i> (1991)	open assembly time, <i>n</i> (1990)	
curing agent, <i>n</i> (1991) <sup>C</sup>	polymer, <i>n</i> (2000)	
durability, <i>n</i> (1990)	polymerization, <i>n</i> (1999)	
edge joint, <i>n</i> (1992)	specific adhesion, <i>n</i> (2000)	
emulsion, <i>n</i> (1988)	squeeze out, <i>n</i> (1990)	
fiber tear, <i>n</i> (1994)	stress, <i>n</i> (1992) <sup>D</sup>	
fiber-tear failure, <i>n</i> (1994)	substrate, <i>n</i> (1990)	
finger joint, <i>n</i> (1990)	surface preparation, <i>n</i> (1989)	
gap-filling adhesive, <i>n</i> (1990)	thermoset, <i>n</i> (1990)	
GLULAM, <i>n</i> (1993)	thixotropy, <i>n</i> (1992)	
impact strength, <i>n</i> (1995)	viscosity, <i>n</i> (1992)	
initial tangent modulus, <i>n</i> (1992)	vulcanization, <i>n</i> (1999)	
interphase, <i>n</i> (1990)	yield strain, <i>n</i> (1994) <sup>A</sup>	
laminated joint, <i>n</i> (1992)	yield stress, <i>n</i> (1992) <sup>E</sup>	
latex, <i>n</i> (1988)	yield value, <i>n</i> (1992) <sup>E</sup>	
layer, <i>n</i> (1990)		
mastic adhesive, <i>n</i> (1992)		
Newtonian behavior, <i>n</i> (1994)		
nominal stress, <i>n</i> (1992)		
non-Newtonian behavior, <i>n</i> (1994)		
nonvolatile content, <i>n</i> (1994)		
peak load, <i>n</i> (1994)		
peel strength, <i>n</i> (1993)		
pin-and-collar specimen, <i>n</i> (1991)		
plasticizer, <i>n</i> (1990)		
polyvinyl acetate emulsion adhesive, <i>n</i> (1989)		
proportional limit, <i>n</i> (1994)		
RTV, <i>n</i> (1992)		
rate of creep, <i>n</i> (1992)		
secant modulus, <i>n</i> (1992)		
shear, <i>n</i> (1995)		
shear modulus, <i>n</i> (1993)		
shear strain, <i>n</i> (1992)		
shear strength, <i>n</i> (1993)		
strain, <i>n</i> (1990)		
stress, <i>n</i> (1991)		
stress-strain diagram, <i>n</i> (1992)		
structural-glued-laminated timber, <i>n</i> (1993)		
tensile strength, <i>n</i> (1994)		
thermosetting resin, <i>n</i> (1991)		
urea-formaldehyde adhesive, <i>n</i> (1989)		
wedge, <i>n</i> (1994)		
yield strain, <i>n</i> (1992)		

<sup>A</sup> The discussion was revised.

<sup>B</sup> Definition was removed. Hardener is now listed as a cross reference to curing agent.

<sup>C</sup> Definition was added. Curing agent was formerly a cross reference for hardener.

<sup>D</sup> A discussion was added to the definition for stress.

<sup>E</sup> The definition for yield strain was transferred to yield stress, with yield value listed as a synonym.

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